98-871

No.

Supreme Court, U.S.
FILED
NOV 25 1998

In the Supreme Court of the United States

OCTOBER TERM, 1998

UNITED STATES OF AMERICA, PETITIONER

v.

HUGHES AIRCRAFT COMPANY

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

PETITION FOR A WRIT OF CERTIORARI

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QUESTIONS PRESENTED

1. Whether, under this Court's decision in *Warner-Jenkinson Co.* v. *Hilton Davis Chemical Co.*, 520 U.S. 17 (1997), prosecution history estoppel bars the application of the doctrine of equivalents to elements of patent claims that are added by amendment for reasons of patentability.

2. Whether, if prosecution history estoppel does not absolutely bar application of the doctrine of equivalents to such elements of amended patent claims, the court of appeals erroneously concluded that the doctrine of equivalents supported a finding of infringement in this case.

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PETITION FOR A WRIT OF CERTIORARI

The Solicitor General, on behalf of the United States, respectfully petitions for a writ of certiorari to review the judgment of the United States Court of Appeals for the Federal Circuit in this case.

OPINIONS BELOW

The order of this Court granting a previous petition, vacating the judgment, and remanding for further proceedings in light of *Warner-Jenkinson Co.* v. *Hilton Davis Chemical Co.*, 520 U.S. 17, is reported at 520 U.S. 1183. See Pet. App. 210a. The opinion of the court of appeals on remand (Pet. App. 1a-15a) is reported at 140 F.3d 1470. The order of the court of appeals denying a petition for rehearing and suggestion for rehearing en banc (Pet. App. 211a-214a) is reported at 148 F.3d 1384. The court of appeals has issued other opinions in this

case, including a 1983 opinion (Pet. App. 100a-135a) reported at 717 F.2d 1351, and a 1996 opinion (Pet. App. 169a-209a), reported at 86 F.3d 1566. A relevant opinion of the trial division of the Court of Claims (Pet. App. 16a-99a) is reported at 215 U.S.P.Q. 787, and a relevant opinion of the Court of Federal Claims (Pet. App. 136a-168a) is reported at 31 Fed. Cl. 481.

JURISDICTION

The judgment of the court of appeals was entered on April 7, 1998. A petition for rehearing was denied on July 28, 1998. Pet. App. 211a-214a. On October 16, 1998, the Chief Justice extended the time within which to file a petition for writ of certiorari to and including November 25, 1998. The jurisdiction of this Court is invoked under 28 U.S.C. 1254(1).

STATEMENT

Respondent Hughes Aircraft Company sued the United States for infringement of United States Patent No. 3,758,051 (the Williams patent), which describes a technology for controlling the attitude of spin-stabilized satellites. The trial division of the Court of Claims rejected respondent's claim that certain accused satellites utilized by the United States infringed the Williams patent under a patent law principle known as the doctrine of equivalents. Pet. App. 16a-99a. The court of appeals reversed that decision. *Id.* at 100a-135a, 169a-209a. This Court vacated the court of appeals' judgment and remanded the case for reconsideration in light of the Court's decision in *Warner-Jenkinson Co.* v. *Hilton Davis Chemical Co.*, 520 U.S. 17 (1997). See Pet. App. 210a. On remand, the court of appeals reinstated its previous judgment. *Id.* at 1a-15a.

1. The United States and other entities employ satellites that are designed to orbit over a given spot on

the earth's surface with their antennae pointing toward the earth. The Williams patent describes technology for controlling the orientation of a spin-stabilized satellite to ensure that the satellite maintains the proper attitude in such an orbit. Pet. App. 2a, 71a-74a, 101a-102a. The Williams patent specifically teaches transmission of the satellite's instantaneous spin angle in "real time" to a ground crew, which compares the actual and desired orientations by reference to a fixed external coordinate system and transmits control signals to the satellite. The ground crew adjusts the satellite's orientation by computing when to activate an orientation control jet and sending an activation signal that is synchronized to coincide with the spin cycle of the satellite. When the synchronized signals are received by the satellite, the jet fires and tilts—or "precesses"—the satellite into the desired position.

Claim 1, which is representative of the claims at issue, requires apparatus comprising (a) a body adapted to spin about an axis; (b) a fluid supply; (c) a valve connected to the supply; (d) a means of expelling the fluid, and the following disputed paragraphs of the claim:

> (e) means disposed on said body for providing an indication to a location external to said body of the instantaneous spin angle position of said body about said axis and the orientation of said axis with reference to a fixed external coordinate system;
>
> (f) and means disposed on said body for receiving from said location control signals synchronized with said indication;
>
> (g) said valve being coupled to said last-named means and responsive to said control signals for

> applying fluid to said fluid expulsion means in synchronism therewith for precessing said body to orient said axis in a predetermined desired relationship with said fixed external coordinate system.

Pet. App. 28a-29a, 104a-105a.

Paragraphs e, f, and g were added during prosecution of the claim in the Patent Office in order to distinguish prior art. A patent issued to McLean had disclosed a spin-stabilized, target-seeking space vehicle with a jet motor on its periphery that automatically precessed the vehicle to keep its spin axis pointing toward its target. The device that McLean described was self-guiding and did not rely on reference to a fixed external coordinate system or on communication with ground control. Pet. App. 39a-61a, 82a-85a, 105a-106a.

The United States has since developed technology for satellites that employs store and execute (S/E) attitude control systems. Those systems are similar in some respects to the device claimed by Williams. The S/E systems, however, do not send information to ground control from which the instantaneous spin angle and spin rate of the satellite can be determined for attitude control. Rather, the S/E systems retain the instantaneous spin angle information in the satellite's on-board computer to pulse the precession jet and maintain the satellite's position. Pet. App. 70a-71a. Control signals received from the ground are stored in the computer for later execution. Upon receipt of the execute command, the S/E system computer calculates the exact instant at which a precession jet should be fired. The control systems of the S/E spacecraft eliminate the need to account for the time delays that result from relaying orientation information between the satellite and the ground crew and permit the ground crew to

verify that the satellite has received the proper command signals. That difference enables the S/E spacecraft to operate at highly elliptical orbits, where the distance between the satellite and the earth changes rapidly so that the real-time system envisioned by Williams might not be feasible. See Pet. App. 200a n.1 (Nies, J., dissenting).

2. Respondent sued the United States in 1973, alleging that the United States' S/E satellites infringed the Williams patent. Respondent conceded that the accused devices do not infringe the literal terms of its patent, but instead based its claim on the doctrine of equivalents. Pet. App. 77a, 80a, 118a; see also *id.* at 75a-76a (finding no literal infringement). Following a trial in 1976 and 1977, the court found that the S/E satellites do not infringe under the doctrine of equivalents. *Id.* at 16a-99a (*Hughes VI*).[1] The trial court reasoned that, "[i]n order to find equivalence and thus infringement, the court must find that the accused structure performs substantially the same function in substantially the same way and for substantially the same purpose as set forth in the claims." *Id.* at 80a.

The trial court held that "the claims of the Williams patent each call for at least two elements that cannot be found in any of the [S/E] systems" and that "the doctrine of equivalents does not operate to expand the scope of the claims to cover these systems." Pet. App. 70a, 71a. "Claim 1 of Williams requires (1) means for providing an indication of the [instantaneous spin angle]

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[1] The trial court had initially held respondent's patent invalid under 35 U.S.C. 102(b), in view of prior art, *Hughes Aircraft Co.* v. *United States*, 205 U.S.P.Q. 381 (Ct. Cl. 1979) (*Hughes IV*), but the Court of Claims reversed that holding on appeal, 640 F.2d 1193 (1980) (*Hughes V*).

to an external location, and (2) means for pulsing the precession jet within a fixed time period after the receipt of the control signal. Neither of these two claimed elements can be shown in the structure of the accused [S/E spacecraft]." *Id.* at 75a; see also *id.* at 84a-85a. The court found that "even though the ground control itself is not an element of the [Williams patent] claim, the structure called for on the spinning body limits the claim to an attitude control system wherein a ground controller is needed to determine the [instantaneous spin angle] and use it to pulse the precession jet during the desired portion of the spin cycle." *Id.* at 74a. Moreover, in the S/E system, "there is no fixed time interval between the receipt of the execute signal and the firing of the precession jet." *Id.* at 79a.

The two distinguishing elements, the trial court found, "were added [during prosecution of the claim in the Patent Office] in combination with a number of other elements to overcome the prior art cited," including the McLean spacecraft, thereby estopping respondent "from claiming that these elements are unnecessary." Pet. App. 84a. "In view of the file wrapper estoppel in this case, the doctrine of equivalents affords protection only against alleged infringers who use obvious and exact equivalents of the elements of the claimed invention." *Id.* at 85a. The trial court stated that the government's accused devices do not infringe because they contain no such "equivalent of [respondent's] means for providing an indication of the [instantaneous spin angle] to an external location." *Ibid.*[2]

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[2] The trial court found that other spacecraft, referred to as the "real time" systems, did infringe Claim 1 of the Williams patent. Pet. App. 85a-97a. The real-time systems, unlike the S/E systems,

3. A divided panel of the court of appeals affirmed in part and reversed in part, upholding the validity of the patent, but concluding that the S/E spacecraft infringed under the doctrine of equivalents. Pet. App. 100a-135a (*Hughes VII*). The court of appeals did not conclude that any of the trial court's findings of fact were clearly erroneous. Nonetheless, the court stated that the trial judge "did not apply the 'substantially the same function, in substantially the same way, to obtain the same result' guidance set forth in *Graver* [*Tank & Mfg. Co.* v. *Linde Air Products Co.*, 339 U.S. 605 (1950)]." *Id.* at 124a. The panel majority ruled the trial court should have determined equivalency by comparing "the claimed invention as a whole" with the "entirety of the accused S/E spacecraft." *Id.* at 125a. Comparing the claims "in their entirety" with "the entirety of the accused S/E spacecraft," the court found "striking overall similarities." *Ibid.* The court acknowledged that "[t]he S/E spacecraft uses sun pulses retained onboard as reference points to fire the jet," whereas "Williams uses sun pulses sent to ground as reference points to fire the jet." *Id.* at 129a. The court concluded, however, that "the government merely employed a modern day computer to do indirectly what Williams taught it to do directly." *Id.* at 126a. It ruled that the claimed and accused devices were sufficiently similar under the doctrine of equivalents to find that the United States had infringed the Williams patent. *Id.* at 130a.

Judge Davis dissented from the majority's finding of infringement by equivalents. Pet. App. 131a-135a

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"had a circuit which permitted the precession jet valve to be directly operated by a signal from ground control." *Id.* at 91a; see *id.* at 97a.

(Davis, J., concurring in part and dissenting in part). He observed that "[t]he accused S/E spacecraft do not contain those elements which were expressly included to overcome prior art." *Id.* at 131a. Judge Davis's analysis focused on the specific limitations in the claims of the Williams patent. He determined that the S/E spacecraft were not equivalent because they "perform[ed] a different function in a different way" from that described in the Williams patent claims. *Id.* at 133a; see also *id.* at 135a. In Judge Davis's view, "[t]o find, as the majority does, in th[e] self-contained onboard computer an equivalent of the specific requirement for providing an indication of [the instantaneous spin angle] to the ground (so that the ground can take account of [it]) is simply to obliterate and disregard this element of the claims." *Id.* at 132a. The Williams claims also require the ground controller "to use the [instantaneous spin angle] to pulse the precession jet during the desired portion of the spin cycle," and they "require means for pulsing the precession jet within a fixed time period after the receipt of the control signal." *Id.* at 133a. Those attributes, too, are absent from the accused structures. *Ibid.* Judge Davis concluded that "the accused devices here are definitely outside the equivalence principle of *Graver Tank*." *Ibid.*

4. On remand, the trial court conducted additional trial proceedings. It first addressed outstanding liability issues. *Hughes Aircraft Co.* v. *United States*, 29 Fed. Cl. 197 (1993) (*Hughes X*). It then awarded in excess of $112 million in royalties and delay compensation, more than $100 million of which is attributable to the S/E spacecraft. 31 Fed. Cl. 464 (1994) (*Hughes XI*); 31 Fed. Cl. 481 (1994) (Pet. App. 136a-168a)(*Hughes XII*).

5. On appeal, the United States sought reversal of the court's earlier holding of infringement by equivalents. Pet. App. 169a-209a (*Hughes XIII*). Applying the doctrine of law of the case, a divided panel adhered to the court's earlier holding—even though the court's intervening en banc decision in *Pennwalt Corp.* v. *Durand-Wayland, Inc.*, 833 F.2d 931 (Fed. Cir. 1987) (en banc), cert. denied, 485 U.S. 961 (1988), had called the court of appeals' earlier decision into question, see Pet. App. 186a-190a, and even though this Court had granted a petition for writ of certiorari in *Hilton Davis Chemical Co.* v. *Warner-Jenkinson Co.*, 62 F.3d 1512 (Fed. Cir. 1995) (en banc), which raised issues involving the doctrine of equivalents, see Pet. App. 190a-192a. Judge Nies dissented. In her view, Judge Davis's dissent from the earlier panel decision "made the type of analysis which must be made under current case law." *Id.* at 207a; see *id.* at 200a-202a (quoting *Hughes VII*, 717 F.2d at 1367 (*Id.* at 132a-133a) (Davis, J., dissenting)).

6. The government petitioned for certiorari and suggested that the Court hold the petition pending the Court's decision in *Warner-Jenkinson Co.* v. *Hilton Davis Chemical Co.*, 520 U.S. 17 (1997). In deciding *Warner-Jenkinson*, the Court recognized the continuing vitality of the doctrine of equivalents, but it also specifically held that the doctrine "must be applied to individual elements of the claim, not to the invention as a whole." 520 U.S. at 29. The Court also stated that, if a limiting element is added to a patent claim by amendment for "a substantial reason related to patentability[,] * * * prosecution history estoppel would bar the application of the doctrine of equivalents as to that element." *Id.* at 33. The Court thereafter granted certiorari in the present case, summarily vacated the

court of appeals' judgment, and remanded the case for further consideration in light of *Warner-Jenkinson*. Pet. App. 210a.

7. On remand, the court of appeals adhered to its previous ruling that the United States' S/E satellites infringed the Williams patent under the doctrine of equivalents. Pet. App. 1a-15a. The court first determined that this Court's order had vacated only *Hughes XIII*, in which the court of appeals relied on law of the case, and not *Hughes VII*, in which the court of appeals had originally reversed the trial court's determination of no infringement by equivalents. *Id.* at 5a-6a. As a consequence of that determination, the court of appeals declined to review the government's argument that the court in *Hughes VII* had engaged in improper appellate fact-finding. *Id.* at 6a n.2. The court of appeals stated, instead, that the only issue before it was whether *Hughes VII* "satisfies the legal analysis required by *Warner-Jenkinson*." *Id.* at 6a.

The court of appeals proceeded to address that question and held that "the analysis performed in *Hughes VII* satisfies the all-elements rule as stated in *Warner-Jenkinson*." Pet. App. 8a. The court of appeals also ruled that prosecution history estoppel is not a bar to a finding of infringement by equivalents. *Id.* at 10a-15a. It concluded, instead, that respondent's amendment of its claims "to overcome a prior art rejection" narrowed the range of equivalents, but did not "preclude all equivalents available to" respondent. *Id.* at 14a. The court held that respondent had not "surrender[ed] subject matter covering a device, such as the accused device, which provides two-way communication with an external location * * * and which uses an external coordinate system." *Ibid.*

The government petitioned for rehearing and suggested rehearing en banc. The petition and suggestion were denied, with two judges dissenting. Pet. App. 211a-214a. Judge Clevenger, joined by Judge Gajarsa, stated in dissent that the government's argument that the panel's decision conflicts with "the blunt and clear words" of *Warner-Jenkinson* posed a question "of utmost importance to patent law" to which "[a] swift answer * * * is needed." *Id.* at 212a, 214a.

REASONS FOR GRANTING THE PETITION

This Court's decision in *Warner-Jenkinson Co.* v. *Hilton Davis Chemical Co.*, 520 U.S. 17 (1997), recognized the continuing vitality of the doctrine of equivalents, which provides that "a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." 520 U.S. at 21. The Court expressed concern, however, that the doctrine of equivalents had "taken on a life of its own, unbounded by the patent claims," and that the doctrine, "when applied broadly, conflicts with the definitional and public-notice functions of the statutory claiming requirement." *Id.* at 28-29. The Court accordingly limited the doctrine in several important respects that are relevant here.

First, in accordance with the suggestion of Judge Nies, who had dissented in *Warner-Jenkinson* and in this case, the Court ruled that "the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole." 520 U.S. at 29; see also Pet. App. 207a. Second, the Court stated that the related doctrine of prosecution history estoppel would "bar the application of the doctrine of equiva-

lents as to" any limiting element that is added to a patent claim by amendment for "a substantial reason related to patentability." 520 U.S. at 33. On remand, the court of appeals declined to follow *Warner-Jenkinson*'s guidance. The court of appeals' conscious departure from this Court's directions on those fundamental issues of patent law presents a matter warranting this Court's review.

Because the doctrine of equivalents enables a patent holder to recover for infringement beyond the literal claims of its patent, the doctrine has become virtually "the second prong of every infringement charge." *London* v. *Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991). As Judge Plager recently stated:

> There is perhaps no question more important to the health of patents than the scope and application of the judicially-created doctrine of equivalents. It permeates the entire fabric of patent law, and appears in virtually every case involving patent enforcement.

Litton Systems, Inc. v. *Honeywell Inc.*, 145 F.3d 1472, 1472 (Fed. Cir. 1998)(Plager, J., dissenting from the denial of rehearing en banc) (Pet. App. 261a).[3] Two other judges who had dissented from the denial of rehearing en banc in *Litton* also dissented from the denial of rehearing en banc in the present case, urging that this Court's review is warranted to clarify the meaning of *Warner-Jenkinson*. Pet. App. 214a (Clevenger, J., joined by Gajarsa, J.). The present uncertainty over the scope of the doctrine of equivalents "harms

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[3] We have reproduced the panel decision and the opinions on denial of rehearing en banc in *Litton* in the petition appendix. See Pet. App. 215a-280a.

both the inventor, who is not sure of the scope of protection that the invention will receive, and competitors of the inventor, who are not sure exactly how close to the claims they can come without being held liable for infringement." Note, *To Bar or Not to Bar: Prosecution History Estoppel After* Warner-Jenkinson," 111 Harv. L. Rev. 2330, 2342-2343 (1998).

1. The court of appeals' most striking error is its express rejection of the Court's directions respecting the application of prosecution history estoppel. This Court explained that prosecution history estoppel applies only where claims have been amended for a limited set of reasons related to patentability, such as the avoidance of prior art. *Warner-Jenkinson*, 520 U.S. at 32-33. The Court then addressed the question of "what to do in a case like the one at bar, where the record seems not to reveal the reason" for an amendment. *Id.* at 33. The Court stated as follows:

> Mindful that claims do indeed serve both a definitional and a notice function, we think the better rule is to place the burden on the patent holder to establish the reason for an amendment required during patent prosecution. *The court then would decide whether that reason is sufficient to overcome prosecution history estoppel as a bar to application of the doctrine of equivalents to the element added by that amendment.* Where no explanation is established, however, the court should presume that the patent applicant had a substantial reason related to patentability for including the limiting element added by the amendment. *In those circumstances, prosecution history estoppel would bar the application of the doctrine of equivalents as to that element.*

Ibid. (emphasis added). That passage unambiguously states that, if a patent applicant adds a limiting element to a patent claim for "a substantial reason related to patentability," then "prosecution history estoppel would *bar* the application of the doctrine of equivalents as to that element." *Ibid.* (emphasis added).

This Court directed the court of appeals to reconsider this case in light of *Warner-Jenkinson*. Pet. App. 210a. On remand, the court of appeals acknowledged that respondent's "amendments to the claim language were made to overcome a prior art rejection." *Id.* at 14a. It nevertheless held, notwithstanding the language quoted above, that this fact only "serve[s] to narrow the range of equivalents," not to "preclude all equivalents available to [respondent]." *Ibid.* The court ruled on that basis that respondent's claim amendments "did not surrender subject matter covering" devices such as the government's S/E satellites. *Ibid.* The court of appeals' ruling conflicts with the "blunt and clear words" of *Warner-Jenkinson*. *Id.* at 212a (Clevenger, J., dissenting from the denial of rehearing en banc). Compare also *Litton Systems, Inc.*, 140 F.3d at 1455-1458 (refusing to bar application of the doctrine of equivalents in a similarly postured case), petition for rehearing en banc denied, 145 F.3d 1472 (1998); with *id.* at 1472-1473 (Plager, J., dissenting from denial of rehearing en banc); *id.* at 1473-1474 (Clevenger, J., dissenting from denial of rehearing en banc); *id.* at 1474-1478 (Gajarsa, J., dissenting from denial of rehearing en banc).

This Court's specific directions in *Warner-Jenkinson* respecting prosecution history estoppel do not appear errant or unintended. The Court preceded those directions with discussion of whether the reason for adding an element by amendment would "necessarily preclude

the application of the doctrine of equivalents as to that element." 520 U.S. at 32; see also *id.* at 33. The Court also substantially repeated those directions in the concluding paragraphs of the *Warner-Jenkinson* opinion. *Id.* at 40-41. The Court's statements reflect the considered view of this Court, and the court of appeals was obligated to follow the Court's guidance when deciding this case on remand. Pet. App. 210a; see *Rodriguez de Quijas* v. *Shearson/American Express, Inc.*, 490 U.S. 477, 484 (1989). The Court clearly stated that, where (as here) a patentee narrows its patent claim by an amendment to distinguish its invention from the prior art and secure its patent, the patentee is estopped from later asserting that the narrowed claim embraces a larger scope than its literal language allows.[4] The court of appeals nevertheless rejected that approach in this case, see Pet. App. 11a-13a, and in *Litton Systems, Inc.*, 140 F.3d at 1456-1458, see Pet. App. 226a-230a. The court of appeals' conclusion that this Court did not mean what it unambiguously said presents an important matter that has divided the Federal Circuit and warrants review by this Court.

2. This case presents a particularly appropriate occasion for the Court to consider the court of appeals' rejection of this Court's guidance in *Warner-Jenkinson* because no infringement should have been found even under the test that the court of appeals elected to follow

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[4] As our brief amicus curiae in *Warner-Jenkinson* pointed out (at 14 n.2), however, we had previously suggested to this Court that, even if the doctrine of equivalents is unavailable, the patentee should still be protected against merely colorable or trivial deviation from the precise language of the claims. That would not, however, permit a broadening of the substance of the limiting elements, as the court of appeals has done here by applying the doctrine of equivalents.

or, for that matter, under any alternative test embracing this Court's decisions respecting the doctrine of equivalents. The court of appeals' approach is misguided in three basic respects. First, the court of appeals incorrectly applied the "all elements" test. Second, the court did not appreciate the significance of the differences between the invention described in the Williams patent and the government S/E satellites, and it consequently failed to recognize what Williams had surrendered when amending his patent claim in response to prior art. Third, the court erred in refusing to defer to the factual findings of the trial court respecting the devices at issue.

a. In response to the Court's remand instructions, the court of appeals held that the government's S/E satellites infringe respondent's patent even if the doctrine of equivalents is applied, as *Warner-Jenkinson* mandates, on an element-by-element basis. That holding is incorrect. The government's S/E satellites have no equivalents to the elements described in paragraphs e, f, and g of Claim 1 of the Williams patent. See pp. 3-4, *supra*. Specifically, the government's S/E satellites do not have: a means "for providing an indication to" an external location "of the instantaneous spin angle position of" the satellites (paragraph e); a means on the satellite for receiving synchronized control signals from the external location (paragraph f); or a means for pulsing the precession jet within a fixed period after receipt of the command signal from the external location (paragraph g).

In *Hughes VII*, the court of appeals clearly did not apply the doctrine of equivalents on an element-by-element basis, and it even faulted the trial court for doing so. See Pet. App. 121a, 124a, 125a-126a, 130a. The court of appeals nevertheless held on remand that

"*Hughes VII* correctly performed an analysis of the function, way, and result of the individual elements in the accused devices and concluded that these elements equivalently met the claim limitations at issue." *Id.* at 10a. The court also adhered to its earlier finding that the government's S/E satellites with their on-board computers merely reflected "an insubstantial change in the way the element[s] performed [their] function." *Id.* at 9a. That analysis conflicts with the test the Court articulated in *Warner-Jenkinson*, which focuses on "whether [each] substitute element matches the function, way, and result of the claimed element, or whether the substitute element plays a role substantially different from the claimed element." 520 U.S. at 40.

While the government's on-board computer system and respondent's ground-control system may both achieve the same overall result of orienting satellites, they have quite different elements and those elements perform their different functions in different ways. Judge Nies, whose element-by-element approach to the doctrine of equivalents was adopted in *Warner-Jenkinson* (see 520 U.S. at 29), explained that point in her dissenting opinion in *Hughes XIII*. Pet. App. 207a. She and Judge Davis, who dissented from the Federal Circuit's initial holding of infringement by equivalents in *Hughes VII* (*id.* at 130a-135a), correctly focused on "the actual structure of the specified components of the invention and of the accused devices" in concluding that the two types of control systems are different. *Id.* at 207a.

Respondent's real-time system requires a ground controller to determine the satellite's instantaneous spin angle and then send a control signal to the satellite to fire the precession jet at the desired point in its spin

cycle within a fixed time period after receipt of the control signal. Pet. App. 74a. By contrast, under the government's S/E system, the ground controller does not determine the satellite's instantaneous spin angle, but rather sends a command to the satellite to fire the precession jet at the appropriate time in the spin cycle. That command is stored in an on-board computer and verified by the ground controller. *Id.* at 74a-75a. The ground command signal is later executed by the computer, but there is no fixed time interval between the receipt of the ground command signal and the firing of the precession jet, which is a key element of respondent's system. *Ibid.* Thus, the control system of the S/E spacecraft eliminates the need to account precisely for the delay required for communication signals to travel from the satellite to the earth and then from the earth to the satellite. This difference enables the S/E spacecraft to operate at highly elliptical orbits, where the distance between the satellite and the earth changes rapidly so that the real-time system envisioned by Williams might not be feasible. See *id.* at 200a n.1 (Nies, J., dissenting).

By holding that those differences between the two control systems are insubstantial, the court of appeals has enlarged the scope of respondent's patent well beyond its express claims, and it has done so in a manner that conflicts with *Warner-Jenkinson*. This Court made clear in its decision that "[e]ach element contained in a patent claim is deemed material to defining the scope of the patented invention" and that the doctrine of equivalents must not be "allowed such broad play as to effectively eliminate [an individual] element in its entirety." 520 U.S. at 29.

b. According to the court of appeals, *Warner-Jenkinson* preserved the principle that "the key to

prosecution history estoppel is the surrender or disclaimer of subject matter by the patentee, which the patentee is then unable to reclaim through the doctrine of equivalents." Pet. App. 12a (citing *Exhibit Supply Co.* v. *Ace Prods. Corp.*, 315 U.S. 126, 136 (1942)). See also *Litton Systems Inc.*, 140 F.3d at 1455, 1457 (stating that *Warner-Jenkinson* "adhered to the longstanding doctrine that an estoppel only bars recapture of that subject matter actually surrendered during prosecution" and that this Court did not change "the scope of subject matter precluded by an estoppel, but only * * * the circumstances that may trigger an estoppel"). But even when considered in light of this Court's pre-*Warner-Jenkison* formulations of prosecution history estoppel, the court of appeals' decision is wrong.

This Court stated in *Exhibit Supply Co.* that "it has long been settled that recourse may not be had to [the doctrine of equivalents] to recapture claims which the patentee has surrendered by amendment." 315 U.S. at 136. As the Court explained, when a patent applicant amends his claim to avoid prior art, the applicant necessarily "proclaim[s] his abandonment of all that is embraced in that difference." *Ibid.* The Court added that the "disclaimer of that difference * * * must be strictly construed against" the patentee. *Id.* at 137. Applying that standard here, it is plain that respondent is barred from claiming infringement because the government's S/E satellites are squarely within the area between respondent's broad disallowed claims and its narrower allowed claims.

Respondent initially claimed a "control means coupled to said valve [connecting pressurized gas to a jet] for actuating said valve in pulses synchronized with the spin of said body." Pet. App. 23a. That claim clearly

encompassed the government's S/E satellites, which also have a means coupled to a valve that controls the pulses of gas synchronized with the spin of the satellite. The patent examiner, however, rejected that broad claim in light of the McLean patent, which described a self-guided missile. *Id.* at 28a, 84a. To distinguish the McLean patent, respondent narrowed its claims to a spinning body, such as a satellite, controlled by an external location, such as a ground control station, by means of control signals synchronized with the instantaneous spin angle of the body. Specifically, respondent limited its claim to a "means disposed on said body for providing an indication to a location external to said body of the instantaneous spin angle position of said body" (paragraph e), a "means disposed on said body for receiving from said [external] location control signals synchronized with said indication" (paragraph f), and a means for pulsing the precession jets synchronously with the control signals (paragraph g). See pp. 3-4, *supra*.

The three elements that respondent claimed as essential factors to distinguish the McLean patent also distinguish the government's S/E spacecraft. That is, the S/E spacecraft do not have a means on the satellite for providing an indication of their instantaneous spin angle position to an external location, such as a ground control station, as paragraph e describes. Nor do the S/E spacecraft have a means on the satellite for receiving external control signals synchronized with the satellite's instantaneous spin angle position (paragraph f) or a means of pulsing the precession jets synchronously with an external control signal (paragraph g).[5]

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[5] The court of appeals reasoned that respondent's amendments "did not surrender subject matter covering a device, such as the

This Court identified the controlling principle in *Smith* v. *Magic City Kennel Club, Inc.*, 282 U.S. 784, 789 (1931): "where an applicant for a patent * * * is compelled by the rejection of his application by the Patent Office to narrow his claim by the introduction of a new element, he cannot after the issue of the patent broaden his claim by dropping the element which he was compelled to include in order to secure his patent." Respondent is "estopped to claim the benefit of [its] rejected claim or such a construction of [its] amended claim as would be equivalent thereto." *Id.* at 790; accord *Graham* v. *John Deere Co.*, 383 U.S. 1, 33 (1966); *Keystone Driller Co.* v. *Northwest Eng'g Corp.*, 294 U.S. 42, 48 (1935).

c. The court of appeals compounded its other errors by failing to give proper heed to the scope of this Court's remand order or to the trial court's role in resolving disputed issues of fact. As we have explained, this case returned to the court of appeals on remand from the government's petition for a writ of certiorari, which challenged the court of appeals' decision, in part, on the ground that "the court of appeals erred in failing

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accused device, which provides two-way communication with an external location (although some calculations are made onboard instead of at the external location) and which uses an external coordinate system." Pet. App. 14a. To be sure, both respondent's satellites and the government's S/E spacecraft use two-way communication with the earth and an external coordinate system. Respondent, however, did not specify two-way communication when narrowing its patent claims. Instead, as discussed above, it limited its claims by adding the very specific communication elements described in paragraphs e, f, and g, none of which applies to the S/E spacecraft. Therefore, even if the court of appeals were correct that the doctrine of equivalents available to respondent is narrowed, but not barred, prosecution history estoppel should nevertheless apply under the test that the court enunciated.

to defer to the trial court's findings of no infringement by equivalents." 96-1297 Pet. Question 2. The Court's grant of the government's petition for certiorari was not restricted to specific issues. Rather, the Court vacated the judgment below and remanded the case "for further consideration in light of" *Warner-Jenkinson*. Pet. App. 210a. On remand, the court of appeals nevertheless "decline[d] the government's invitation to revisit the issue of whether the panel in *Hughes VII* engaged in improper appellate fact-finding." *Id.* at 6a n.2.

The government's challenge on this matter relates directly to the question of how the doctrine of equivalents should be applied. The trial court in *Hughes VI* found that the government did not infringe respondent's patent under the doctrine of equivalents based upon its finding that "the claims of [respondent's] patent each call for at least two elements that cannot be found in any of the [government's] systems" and that there were no equivalents for these elements. Pet. App. 70a, 74a. A divided court of appeals panel overturned that finding in *Hughes VII*, but it did not hold that the trial court's findings were clearly erroneous. See *id.* at 207a (Nies, J., dissenting). Instead, that interlocutory decision held that the trial court should have determined equivalence by examining "the claimed invention as a whole." *Id.* at 125a. In *Hughes XIII*, another divided panel applied the law-of-the-case doctrine and refused to review the finding of equivalence, notwithstanding an intervening en banc decision that had rejected the "invention as a whole" approach to the doctrine of equivalents. *Pennwalt Corp.* v. *Durand-Wayland, Inc.*, 833 F.2d 931 (Fed. Cir. 1987)(en banc), cert. denied, 485 U.S. 961, 1009 (1988). This Court in *Warner-Jenkinson* has now, of course,

also rejected the "invention as a whole" test and adopted the element-by-element test.

This Court, as well as the court of appeals, has long held that "[a] finding of equivalence is a determination of fact." *Graver Tank & Mfg. Co.* v. *Linde Air Prods. Co.*, 339 U.S. 605, 609 (1950); see *Hilton Davis Chemical Co.* v. *Warner-Jenkinson Co.*, 62 F.3d 1512, 1520-1522 (Fed. Cir. 1995), rev'd on other grounds, 520 U.S. 17 (1977).[6] The trial court's finding of lack of equivalence in *Hughes VI* (or at least the factual components of that finding) therefore should have been reviewed by the court of appeals under the clearly erroneous standard. *Whitney Benefits, Inc.* v. *United States*, 926 F.2d 1169, 1171 (Fed. Cir.), cert. denied, 502 U.S. 952 (1991); *Insta-Foam Prods., Inc.* v. *Universal Foam Sys., Inc.*, 906 F.2d 698, 702 (Fed. Cir. 1990). Under that familiar standard, an appellate court does not decide factual issues *de novo*, but rather can overturn a finding only when it has "the definite and firm conviction that a mistake has been committed." *Anderson* v. *City of Bessemer City*, 470 U.S. 564, 573 (1985) (quoting *United States* v. *United States Gypsum Co.*, 333 U.S. 364, 395 (1948)). As the Federal Circuit itself has acknowledged, "[f]act-finding by the appellate court is simply not permitted." *Atlantic Thermoplastics Co.* v. *Faytex Corp.*, 5 F.3d 1477, 1479 (1993).

The court of appeals' refusal to consider on remand whether it had erred in failing to defer to the trial court's findings fortifies the other formidable reasons calling for this Court's review. The trial court found, as a matter of fact, that the government did not infringe

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[6] In *Warner-Jenkinson* this Court discussed, but ultimately did not decide, the roles of the judge and jury in applying the doctrine of equivalents. 520 U.S. at 37-39.

respondent's patent under the doctrine of equivalents, applied on an element-by-element basis. See Pet. App. 80a-85a. The court of appeals rejected that finding on an improper "entire-invention" basis, nowhere concluding that the trial court's findings were clearly erroneous. See *id.* at 207a (Nies, J., dissenting). The government's previous petition for a writ of certiorari specifically raised and preserved that issue, and this Court's grant of the government's petition, vacation of the judgment, and remand for further consideration provided the court of appeals with the opportunity to resolve that outstanding issue. The court of appeals erred in a fundamental way in refusing even to consider that issue on remand. The court has subjected the United States to more than $100 million in liability without considering a dispositive issue embraced within this Court's remand order—and, as we have shown, in erroneously deciding the issues that it did consider.

CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted.

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NOVEMBER 1998